

**AWARD NUMBER:** W81XWH-14-1-0259

**TITLE:** Spin, Unit Climate, and Aggression: Near Term, Long Term, and Reciprocal Predictors of Violence Among Workers in Military Settings

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**TYPE OF REPORT:** Annual

**PREPARED FOR:** U.S. Army Medical Research and Materiel Command  
Fort Detrick, Maryland 21702-5012

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14. ABSTRACT The primary goal of this effort is to conduct a prospective study evaluating potential near term and longer term predictors of various forms of aggression and closely related constructs (e.g., physical assault, verbal aggression, anger / rage, bullying, harassment, intimate partner violence) as well as physical health and mental health outcomes often associated with exposure to aggression (e.g., drug / alcohol use, burnout, suicidal ideation). The effort examines both individual level variables (e.g., differences in within-person variability in emotional state, known as "spin") and perceptions of group level variables (e.g., unit climate) hypothesized to impact aggression, health, and mental health. Because we anticipate many of the relations are reciprocal (e.g., aggression influences health, which also influences aggression), the study consists of several waves spanning roughly 14 months. During this project year (PY3), recruitment and screening continued on a rolling basis and waves 2, 3, and 4 were launched for those participants who had enrolled early enough to be eligible for those waves.					
15. SUBJECT TERMS workplace aggression; affective spin; unit climate; substance use; stress ; intimate partner violence ; suicidality					
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## TABLE OF CONTENTS

	<u>Page No.</u>
1. Introduction	4
2. Keywords	4
3. Accomplishments	4-7
4. Impact	7
5. Changes/Problems	7-10
6. Products	10
7. Participants & Other Collaborating Organizations	10-13
8. Special Reporting Requirements	13
9. Appendices	13-14

## **1. INTRODUCTION:**

The prediction of aggressive behaviors is an historically difficult task. However, it is also a very important task, particularly in settings such as the military workplace. In addition to the harm that can be caused to targets of physical aggression, witnessing aggression in the workplace can have negative consequences for unit performance, physical health, and mental health. An oft overlooked aspect of aggression is that it is a product of factors occurring both in short (e.g., provocations) and long time frames (e.g., repeated exposure to stressful settings) as well as the individual (e.g., personality) and group level (e.g., unit climate). The primary goal of this effort is to conduct a prospective study evaluating potential near term and longer term predictors of various forms of aggression and closely related constructs (e.g., physical assault, verbal aggression, anger / rage, bullying, harassment, intimate partner violence) as well as physical health and mental health outcomes often associated with exposure to aggression (e.g., drug / alcohol use, burnout, suicidal ideation). The proposed effort includes both individual level variables (e.g., differences in within-person variability in emotional state, known as “spin”) and perceptions of group level variables (e.g., unit climate) hypothesized to impact aggression, health, and mental health. Because we hypothesize many of these relationships are reciprocal (e.g., health is influenced by and influences aggression), the study re-surveys the same individuals across several waves spread over approximately 14 months. The original timeline specified Project Year 1 would consist primarily of reviewing the scholarly literature relating to aggression as well as investigation reports from mass casualty events, refining and finalizing measures, and obtaining relevant approvals to conduct the study, with recruitment and data collection spanning Project Years 2 and 3 and analysis in late Project Year 3. Due to recruitment difficulties, we requested and received an extension to allow for data collection and analysis to continue into a Project Year 4.

## **2. KEYWORDS:**

workplace aggression; affective spin; unit climate; substance use; stress ; intimate partner violence ; suicidality

## **3. ACCOMPLISHMENTS**

### **What were the major goals of the project?**

The effort consists of a qualitative examination of past incidents of aggression (via investigation reports) plus a prospective study to evaluate variables likely to predict near and long term risk of several forms of aggression and closely related concepts (e.g., physical assault, verbal aggression, anger / rage, bullying, harassment, intimate partner violence) and related physical health and mental health concerns (e.g., drug / alcohol use, burnout, suicidal ideation). We proposed to do so by looking at both individual level and perceived unit level factors across time. For the former, we focus on within-person variability in emotion and interpersonal behaviors (known as “spin”), history of aggression, and mental health states related to aggression (e.g., borderline personality disorder, stress). For perceptions of the unit, we focus on perceptions of unit leadership and perception of unit climate regarding the appropriateness of aggressive behavior and of emotion displays. As such, the effort integrates findings and theories across several separate literatures (e.g., emotion regulation, aggression in the workplace, domestic violence, substance use, etc.). We expect the variables we identify

interact with each other over time to influence aggression, health, and mental health outcomes, and that some of these relationships are reciprocal in nature (e.g., aggression impacts mental health, which then impacts aggression). To assess these possibilities, we use a mixture of experience sampling methods (ESM; brief repeated measures taken each day for several days) via smart phone based questionnaire delivery tools and traditional longitudinal methods (i.e., lengthier surveys at several month intervals) via web based delivery tools.

Our approach is largely informed by the  $I^3$  model's (Finkel et al., 2012) separation of predictors of aggression into Impellers (factors that influence base rate of aggressive urges), Instigators (akin to provocations), and Inhibitors (in this case, individual differences in ability to control one's hostile emotions and behavior). We think of potential predictors – including potentially reciprocal predictors – in terms of how they might influence one's base rate of having aggressive urges absent provocation, seeing an event as a provocation, and ability to restrain oneself from acting on an aggressive urge if such an urge is experienced.

### **Objectives/Hypotheses**

1. To examine the relationship of within-person variability (“spin”) to aggressive behavior and health outcomes.
2. To examine potential reciprocal relationships of mental health variables (e.g., stress, substance use) to aggression over time.
3. To examine the relationship of “unit climate” to aggressive behaviors and health outcomes.
4. To examine the relationship between individual regulatory skills and aggression.

### **Specific Aims**

1. To determine the utility of measures of affective and interpersonal spin, hostility and regulatory climate, and individual differences in self-regulation as predictors of aggressive behavior and health outcomes.
2. To describe the near and long term interactions between these factors, and their influence on aggression and health outcomes.

### **Year 1 Major Activities & Milestones**

1. Search literature and investigation reports to inform selection of variables and measures (Sep 2014-Feb 2015; completed Mar 2015)
2. Compile measures into questionnaire (Sep 2014-Feb 2015; completed Feb 2015)
3. Obtain regulatory approvals, including modifications (Feb 2015-Aug 2015; completed Nov 2015)
4. Formalize results of literature search as scholarly review document (Apr-Aug 2015; submitted May 2016)

### **Year 2 Major Activities & Milestones**

1. Recruitment and enrollment of participants (Oct 2015; launched Jul 2016, ongoing)
2. Launch data collection waves 1 (ESM wave; Nov 2015; launched Aug 2016, ongoing), 2 (survey; Dec 2015; launched Oct 2016, ongoing), and 3 (ESM plus survey; Apr 2016; launched Mar 2017, ongoing)
3. Data entry and preparation (Nov 2015 – July 2015; pending accrual of more participants)

### **Year 3 Major Activities & Milestones**

1. Data collection waves 4 (survey; Aug 2016; launched Jul 2017, ongoing) and 5 (survey; Dec 2016; projected launch Oct 2017)
2. Data entry and preparation (Aug 2016 – Jan 2017; now slated for Oct-Dec 2017)
3. Primary data analysis (Jan-Jul 2017; now slated for Mar-Jul 2018)
4. Final report (Aug 2017; now slated for Oct 2018)

### **What was accomplished under these goals?**

Year 1 saw the selection of measures, assembly of these measures into our online instruments, the bulk of the literature review, and initial IRB approval. Modifications to the recruitment plan recommended by the recruitment liaison at the time received IRB approval in Year 2, at which point recruitment and the first wave of the study were launched. We continued to refine our web presence / electronic outreach needed to increase the effectiveness of recruitment materials throughout Year 2 and Year 3. During Year 3, we initiated additional recruitment strategies to address a slower than anticipated rate of enrollment (see changes / problems). To avoid losing participants who joined the study when enrollment first opened, we launched waves 2, 3, and 4 for our existing participants during Year 3. We did not achieve our recruitment goal in Year 3, and remain under-enrolled. As a result, the analyses originally slated for Year 3 have not yet been performed. Steps taken to address the enrollment issues and resultant delays are described in section 5.

During Year 2 and throughout Year 3, screening was conducted using a traditional web-based questionnaire approach taking a typical service member 3-5 minutes. The entry to the screening questionnaire employed a “bot” blocking tool to ensure respondents were people rather than programs. Questions within the screening questionnaire assessed whether respondents were active duty personnel in a service falling within the scope of the project as well as demographics and career field. Answers were evaluated for internal coherence to screen out people pretending to be military. Qualifying participants were then invited to Wave 1, which used experience sampling methodology (i.e., a 2-3 minute questionnaire before and after duty for each of several days). Although most participants completed Wave 1 using an app for tablets or smart phones, a web version was also available for those who did not wish to use the app. Wave 2 used a traditional web-based questionnaire. Participants from Wave 1 were sent an invitation, link, and password to the questionnaire. Wave 3 involved overlapping experience sampling and web-based questionnaire. The former used the same general procedure as Wave 1, and the latter used the same general procedure as Wave 2. Wave 4 used a traditional web-based questionnaire, and followed the same general procedure as Wave 2.

In Year 3 we also submitted a review-style manuscript to a scholarly journal based on the scholarly summary provided to the sponsor in Year 2. Unfortunately, the journal in question did not select our manuscript for publication.

### **What opportunities for training and professional development has the project provided?**

Years 1 and 2 involved weekly meetings with research assistants involving discussion of relevant theory and findings to help research assistants develop a deeper understanding of the literatures on military psychology, social psychology, organizational psychology, affect, mental health, and aggression. In Year 2, two research assistants were partially subsidized by the project to attend a scholarly conference to learn about not yet published research in health

and aggression as well as to learn more about scholarly norms. Year 3 involved individual rather than group meetings of the PI with each research assistant and consisted of more focused training on the data collection systems being used. Year 3 also provided research assistants additional training regarding the publication process for scholarly journals.

**How were the results disseminated to communities of interest?**

Nothing to report

**What do you plan to do during the next reporting period to accomplish the goals?**

We will continue to advertise on Facebook and installation-focused sites (e.g., base news sites, MWRs) at our original (Fort Bliss, Fort Stewart, and JBSA) and recently added installations (Fort Bragg, Fort Carson, Fort Campbell, Fort Drum, and Fort Hood). We will also pursue recruitment via contacts being developed by our sponsor-appointed liaison, continue to identify additional recruitment options, and seek sponsor approval of those that appear promising (see section 5, Changes / Problems).

Using the wave 1 and 2 data we have so far, we will begin developing statistical code so that we will have syntax and scripts in place and ready to execute once we reach our target sample size for these waves. Given the similarity of the items used in later waves to those used in waves 1 and 2, the resultant syntax and scripts will help accelerate analyses of later waves as more data become available.

The review-style manuscript submitted to a scholarly journal for consideration in Year 3 was not accepted for publication. We will continue to seek scholarly journals where the manuscript might obtain a more positive response and refine the manuscript for resubmission.

#### **4. IMPACT**

**What was the impact on the development of the principal discipline(s) of the project?**

Nothing to report this period.

**What was the impact on other disciplines?**

Nothing to report

**What was the impact on technology transfer?**

Nothing to report

**What was the impact on society beyond science and technology?**

Nothing to report.

#### **5. CHANGES/PROBLEMS:**

**Changes in approach and reasons for change**

In keeping with the 2015 IPR feedback, in Year 2 we focused recruitment efforts on a small number of installations. As reported in previous quarterly reports, we continued to have difficulty in recruiting. Therefore, in keeping with 2016 IPR feedback, in Year 3 we attempted to develop additional routes to recruiting at these installations. Due to continuing problems

with recruitment, in Q3 of this year we asked to expand the number of installations to which we advertised and advertised through additional channels. We developed an initial list of potential installations to which to expand based on the number of active duty personnel and the types of units (as a proxy for likely MOS or AFSC) associated with each installation. We discussed the preliminary list with our sponsor-assigned Science Officer and then with our sponsor-assigned recruitment liaison. After incorporating feedback from these discussions, we elected to expand our recruitment efforts to include Fort Bragg, Fort Campbell, Fort Carson, Fort Drum, and Fort Hood.

When we requested permission to add installations, we also requested permission to use a “perceived climate” approach for units from which too few individuals participated to calculate true climate. Perceived climate can be calculated using our existing items (those originally included to calculate climate). The advantage of perceived climate in this context is that it does not require aggregation across members of the same unit. That is, perceived climate is calculated and interpreted at the individual rather than group level. Although perceived climate and true climate are not identical to each other, recent scholarly works comparing the two variables indicate a high degree of overlap. Using perceived climate (when and if necessary) will allow us to assess climate-like influences in units in which sampling is not sufficient to calculate true climate while still allowing us to calculate true climate in units from which we have sufficient respondents to do so.

When we requested permission to expand the number of installations, potential issues with doing so were discussed. One pertained to potential regional differences. Because we had assumed participants within any given installation were likely to have come from a range of regions of the U.S., we had taken care to avoid making our measures region specific. As part of our initial descriptive analyses, we will check for differences between installations and between regions. A second potential issue pertained to the possibility that increasing the number of installations would decrease the likelihood of obtaining sufficient participants within a given unit to estimate climate. We intend to attempt to minimize this risk through recruitment leads being identified for us by our sponsor-assigned liaison, including Community Health Promotion Councils. We intend to reach out to CHPCs at the selected installations and, with their assistance, to units at those installations. One possibility being pursued is arranging to speak about our project at a CHPC meeting at each of the selected installations. We could then follow up with unit representatives to the CHPC regarding opportunities to engage in more direct outreach to unit members. These outreach efforts should help increase the chances that service members responding to our advertisements cluster within units.

We were recently informed of, and are currently attempting to learn more regarding, recruitment assistance services offered by the vendor who provided our web-based questionnaire platform. We have had a very preliminary discussion with our sponsor-assigned Science Officer regarding parameters under which we might use such services to supplement our other efforts.

#### **Actual or anticipated problems or delays and actions or plans to resolve them**

During project Year 3, we continued to encounter difficulty recruiting participants. For this reason, we requested permission to exercise the extension clause in the original contract with



the additional time being used to increase enrollment. We also received permission to expand our recruiting efforts to additional installations. While this was occurring, we expanded electronic recruitment to include advertisements on installation-focused news sites and MWR sites and worked with our sponsor-appointed liaison to identify additional installations from which to recruit as well as additional routes and contacts to pursue to recruit participants. In consultation with our sponsor-appointed liaison, we selected Fort Bragg, Fort Campbell, Fort Carson, Fort Drum, and Fort Hood. We also obtained permission to take a “perceived climate” approach should it become necessary. Using a perceived climate approach does not require a change to the measures. However, perceived climate is calculated at the individual level rather than by aggregating across members within a unit. As a result, perceived climate can be calculated in units with too few respondents to calculate climate. Because perceived climate can be calculated with the same items as the original climate approach, we will still be able to calculate true climate for units in which the expanded recruitment effort yields the desired number of participants within unit.

As of the end of the reporting period, 275 individuals had begun the (pre-consent) web based eligibility screen. Of the 275 starts, 220 completed enough of the screen to determine eligibility and 180 completed the full screen. A total of 132 met the parameters approved by the sponsor and HRPO and were invited to participate. Forty-nine registered for Wave 1, 40 of whom provided answers to one or more days of that wave’s experience sampling mini-questionnaires. A portion of these registered or took part too late in the year to be invited to Wave 2 before the end of PY3 (13 and 11, respectively) and will receive invitations to Wave 2 early in Q1 of PY4. Of those invited to Wave 2 prior to the end of PY3, 16 completed it. Two of those invited to Wave 2 in PY3 took part too late to be invited to Wave 3 during PY3. This left 21 of the original participants eligible to receive invitations to Wave 3 in PY3 plus 15 eligible to be invited to Wave 3 at a later date. Of those invited to Wave 3, 9 participated fully. For 3 participants, Wave 3 was their second consecutive missed wave. In our procedure on file with HRPO, missing two consecutive waves is treated as indicating withdrawal from the study. Removing these 3 participants left 18 of the original participants eligible to be invited to Wave 4 prior to the end of PY3. The 15 participants who enrolled too late to be eligible for Wave 3 in PY3 remain eligible to be invited to Wave 4 in PY4. Of the 18 invited to Wave 4 in PY3, 12 participated fully. For 5 participants, Wave 4 was their second consecutive miss. This left 12 of the original participants plus the 15 more recent participants (i.e., those enrolling too recently to have yet been invited to Wave 4) eligible to be invited to Wave 5 in PY4. Although the acceptance rate of invitations among those who screened as eligible is not surprising, our attrition between waves is higher than we anticipated. To reduce attrition, we have focused on improving the reminder provided and simplifying the interface where possible. We will continue to monitor attrition and identify other remedies for attrition.

### **Changes that had a significant impact on expenditures**

A large portion of the cost of this project pertains to human subjects costs, particularly “thank you” gifts to participants. Because we continue to lag on enrollment, we are similarly behind on human subjects expenditures

### **Significant changes in use or care of human subjects, vertebrate animals, biohazards, and/or select agents**

**Significant changes in use or care of human subjects**

No changes qualifying as significant by HRPO standards have occurred.

**Significant changes in use or care of vertebrate animals.**

N/A ; Effort does not involve any non-human subjects or specimens

**Significant changes in use of biohazards and/or select agents**

N/A ; Effort does not involve any biohazards or related substances

**6. PRODUCTS**

- **Publications, conference papers, and presentations**

**Journal publications.**

Nothing to report

**Books or other non-periodical, one-time publications.**

Nothing to report

**Other publications, conference papers, and presentations.**

Nothing to report

- **Website(s) or other Internet site(s)**

Nothing to report

- **Technologies or techniques**

Nothing to report

- **Inventions, patent applications, and/or licenses**

Nothing to report

- **Other Products**

Nothing to report

**7. PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS****What individuals have worked on the project?**

Name: Michael R. Baumann

Project Role: PI

ORCID: 0000-0001-9633-0677

Nearest person months

worked this year: 2 (1.0 via project funding; 1.0 via UTSA research time)

Contribution to project: Dr. Baumann coordinated the efforts of senior personnel, coordinated development and distribution of recruitment materials, oversaw research assistant efforts, and coordinated with Sponsor and their representatives regarding improvements to recruitment.

Name: Rebecca Weston

Project Role: Co-PI

ORCID: 0000-0003-0457-1970

Nearest person months worked this year: 1  
Contribution to project: Dr. Weston's primary contributions this project year were in the form of advising on improving recruitment materials and process.

Name: Daniel J Beal  
Project Role: Co-PI  
ORCID: 0000-0003-4750-2430

Nearest person months worked this year: 1  
Contribution to project: Dr. Beal's primary contributions this project year were in the form of advising on the experience sampling platform.

Name: David Oviatt  
Project Role: Research Assistant  
ORCID: 0000-0002-3343-2411

Nearest person months worked this year: 2  
Contribution to project: Dr. Oviatt's association with the project ended this calendar year due to a planned departure for a post-doctoral fellowship. His responsibilities during the portion of the year he was with the project involved monitoring screening and enrollment and training other RAs to assume his duties upon his departure.

Name: Janet Bennett  
Project Role: Research Assistant  
ORCID: 0000-0002-7542-3265

Nearest person months worked this year: 3  
Contribution to project: Dr. Bennett's association with the project ended this calendar year due to her graduation and planned departure. Her responsibilities during the portion of the year she was with the project included serving as corresponding author on the manuscript submitted to *Military Psychology*, developing and monitoring advertising and our web presence, monitoring screening and enrollment, and training other RAs to assume her duties upon her departure.

Name: James Deller  
Project Role: Research Assistant  
ORCID: 0000-0001-7374-7621

Nearest person months worked this year: 6  
Contribution to project: Mr. Deller's primary responsibilities were refining delivery of the later-wave questionnaires, preparing to troubleshoot any technical difficulties participants may report, and identifying methods to streamline conversion of data from the formats used in our collection tools to the formats used in our statistical analysis tools.

Name: Jessica Perrotte  
Project Role: Research Assistant  
ORCID: 0000-0002-4091-7820  
Nearest person months worked this year: 6  
Contribution to project: Ms. Perrotte's primary responsibilities involved assuming the screening and enrollment monitoring duties of Dr. Oviatt and the web-presence efforts of Dr. Bennett upon their respective departures.

**Has there been a change in the active other support of the PD/PI(s) or senior/key personnel since the last reporting period?**

Michael R. Baumann:  
No change

Rebecca Weston:  
None

Daniel Beal:  
New support obtained since last annual report:  
NIH  
Language and Neural Recovery from Stroke: The Role of Selection and Working Memory  
Sep 2016 – Aug 2021  
Role: Co-I  
Commitment: .5 month per year (12 calendar months at 4%)

Craig Bryan:  
New support obtained since last annual report:  
Army Medical Research Acquisition  
Targeting Chronic Pain and Co-Occurring Disorders in the Community with Mindfulness-Oriented Recovery Enhancement  
Aug 2016 – Aug 2021  
Role: Co-I  
Commitment: 1.4 months per year (12% per calendar month)

Support completed since last annual report  
Military Suicide Research Consortium  
Brief Interventions for Short-Term Suicide Risk Reduction in Military Populations  
Oct 2011 – Sep 2016  
Role: PI  
Commitment: 2.5 months per year (20% per calendar month)

Department of Defense  
A virtual PTSD clinical assistant with cloud computing and mobile interface: VPCA  
Oct 2015 – Mar 2017  
Role: Co-Investigator  
Commitment: 0.4 months per year (3% each calendar month)

Northrop Grumman  
Understanding the Characteristics and Trajectory of Non-Suicidal, Self-Injury in  
Military Members  
Oct 2015 – Mar 2017

Role: PI

Commitment: .3 months per year (2.5% each calendar month)

National Institute of Drug Abuse  
Targeting Military Opioid Misuse Through Mindfulness-Oriented Recovery  
Enhancement

Sep 2013 – Jul 2017

Role: Co-I

Commitment: .6 months per year (5% each calendar month)

### What other organizations were involved as partners?

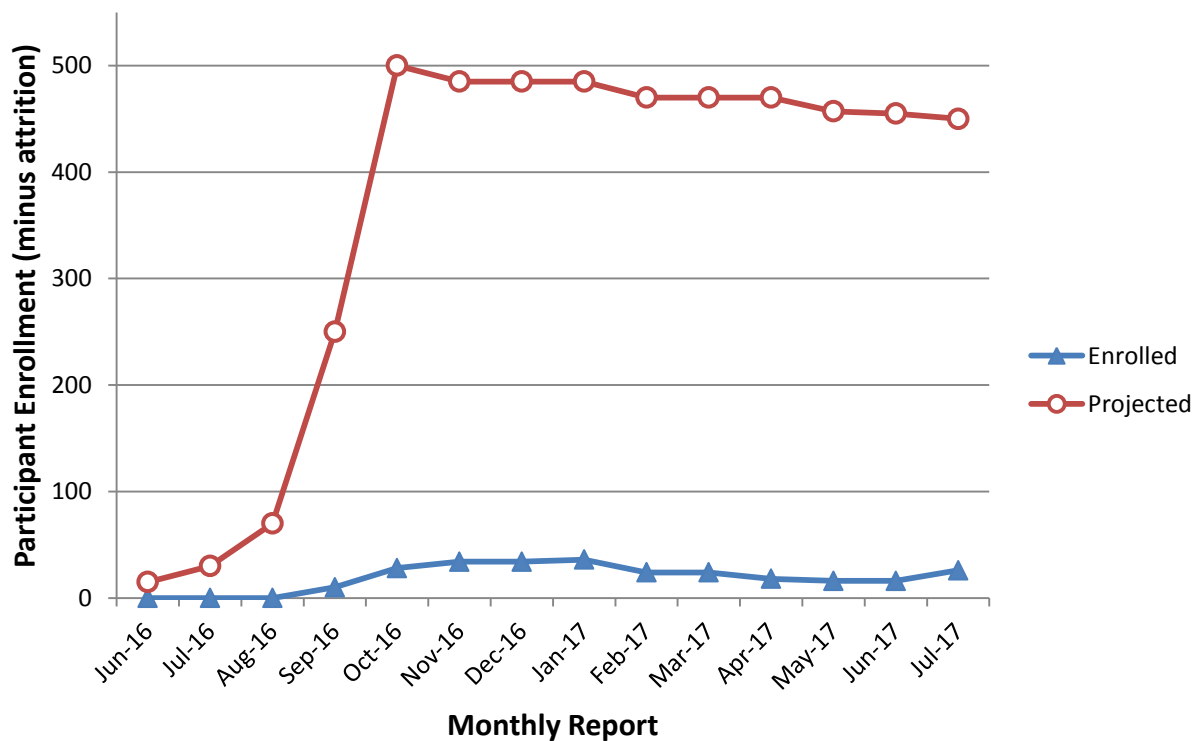
Nothing to report (all organizations involved were previously specified)

## 8. SPECIAL REPORTING REQUIREMENTS

### QUAD CHARTS:

Submitted as Appendix A

### ENROLLMENT CHART (accounting for attrition):



## 9. APPENDICES:

Appendix A: Quad chart

# Spin, unit climate, and aggression: Near term, long term, and reciprocal predictors of violence among workers in military settings

Log Number 14303006

Award Number W81XWH-14-1-0259

PI: Michael R. Baumann, PhD

Org: The University of Texas at San Antonio

Award Amount: \$637,443

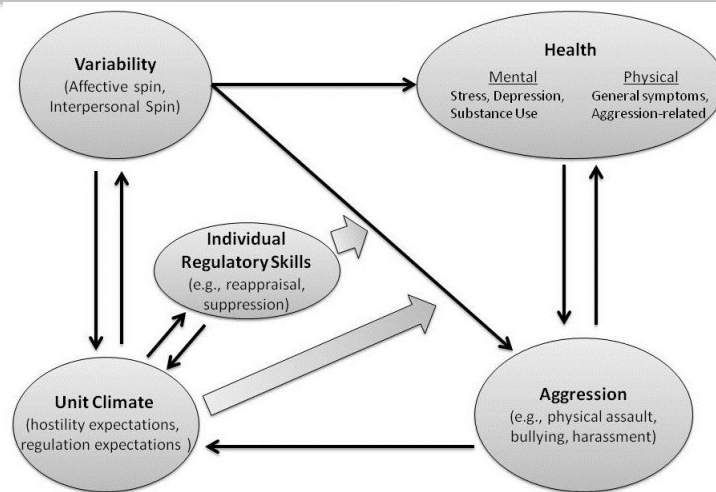


## Study/Product Aim(s)

- To determine the utility of affective and interpersonal spin as predictors of aggressive behavior and health outcomes
- To determine the utility of unit level hostility and regulatory climates as predictors of aggressive behavior and health outcomes
- To determine the utility of differences in self-regulation as predictors of aggressive behavior and health outcomes
- Describe the near and long term interactions, including reciprocal relationships, between these factors, aggression, and health outcomes

## Approach and Military Relevance

Aggression is influenced by immediate (e.g., provocation) and long term (e.g., history of abuse) factors at multiple levels (e.g., individual, unit). To untangle these factors we use ESM and longitudinal methods with cutting edge statistical analyses. Our findings will make it possible to develop policy interventions based on immediate and early warning signs and, by examining reciprocal relationships, identify risk spirals. Because we include several health outcomes, our findings will also have direct implications for the physical and mental health of military employees.



Recruitment continues; Additional recruitment materials in development; Waves 1-4 in progress; Wave 5 prepared for launch

## Timeline and Cost

Activities	CY	14	15	16	17	18
Conduct reviews & complete review documents		■	■			
Complete questionnaire & obtain IRB approvals		■	■	■		
Data Collection				W1 ■ W2 ■	W3 ■ W4 ■ W5 ■	
Analysis & Report					■	■
<b>Estimated Budget (\$K)</b>		<b>\$8k</b>	<b>\$165k</b>	<b>\$196k</b>	<b>\$100k</b>	<b>\$169k</b>

Updated: Aug 2017

## Projected Goals/Milestones (Revised)

**CY14 Goals** – Conduct literature reviews, refine questionnaires

**CY15 Goals** – Obtain IRB approval; formalize reviews; launch study

- CY15 goals completed early CY16 through mid CY16

**CY16 Goals** – Data collection

- Final IRB / HRPO approvals received; Recruitment launched
  - Waves 1 (Aug) & 2 (Oct) launched; rolling enrollment continues
- CY17 Goals** – Complete data collection, analysis, and report
- Waves 3 (Mar) & 4 (Jul) launched; rolling enrollment continues
  - Launch of Wave 5 anticipated Oct 2017

**CY18 Goals** – Complete data collection, analysis, and report

- Estimated Jul 2018, Mar-Jul 2018, and Oct 2018, respectively

## Comments / Challenges

- Recruitment difficulties continue to delay accrual and therefore delay outlay of human subjects costs
- Pursuing additional avenues and overlapping waves to adjust

## Budget Expenditure to date

- Projected : \$637k Actual : \$448k